



Superfund At Work

Hazardous Waste Cleanup Efforts Nationwide

Northside Landfill Site Profile

Site Description:

A municipal landfill in Spokane, Washington

Site Size: 345 acres, 150 of which were used for landfill activities

Primary Contaminants:

Tetrachloroethylene, trichloroethylene

Potential Range of Health Risks:

Headaches, liver and kidney damage with prolonged exposure

Nearby Population:

65 people in 20 residences

Ecological Concerns:

Contaminated ground water plume migrating northwest of the site

Year Listed on NPL: 1986

EPA Region: 10

State: Washington

Congressional District: 5

Success in Brief

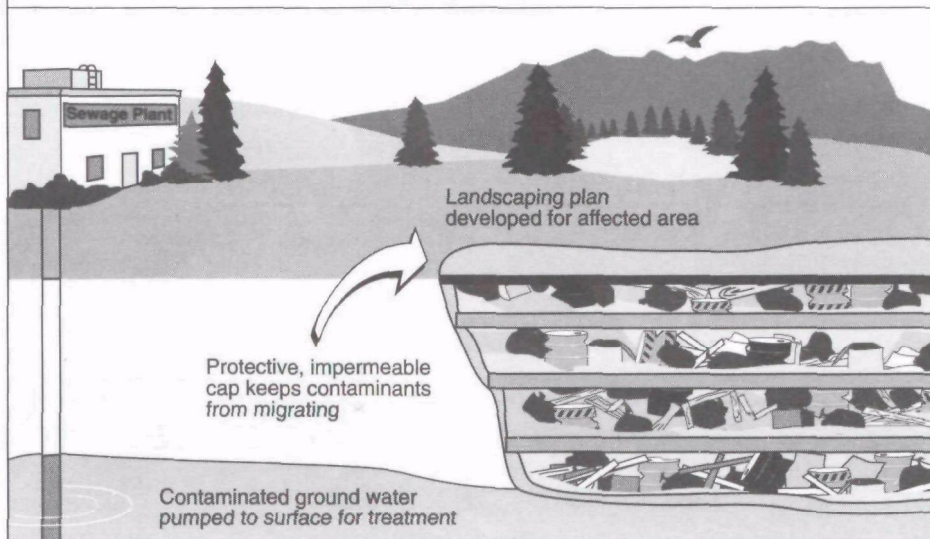
Collaborative Cleanup of Northside Landfill

Cleanup of the Northside Landfill in Spokane, Washington is an example of effective collaboration with state and local governments in addressing a Superfund hazardous waste site. The U.S. Environmental Protection Agency (EPA) worked with the Washington Department of Ecology (Ecology) and the City of Spokane to close this municipal landfill in a timely and efficient manner. City officials recognized that the landfill had reached capacity, local wells were contaminated, and ground water needed thorough treatment. EPA and Ecology worked with Spokane's Department of Solid Waste Management to:

- Provide a clean source of drinking water for residents whose wells were contaminated; and
- Construct a state-of-the-art plastic cover to "cap" the landfill and guard against the further spread of contaminants.

The city then designed a new approach to managing solid waste for the entire county.

Multi-Phase Cleanup at Northside Landfill



The Site Today

The City of Spokane completed construction of the protective cap over the landfill in May 1993. Currently, a landfill gas collection system captures and burns methane gas, while a ground water pump and treatment system prevents contaminated ground water from migrating off site. In addition, the City of Spokane and the local community are investing \$1 million to landscape the site.

A Site Snapshot

The Northside Landfill site covers 345 acres in northwestern Spokane, Washington. The active area of the landfill occupied 150 acres directly above a large aquifer, the primary source of drinking water for 177,000 residents of Spokane.

The landfill opened in 1931 for the disposal of light commercial and residential garbage. While operating, the site was the largest landfill in the county, and received most of Spokane's refuse, including small amounts of hazardous waste. For almost 10 years, sludge from the municipal sewage treatment plant, laden

with heavy metals and organic solvents, was disposed of in the landfill. Rainwater drained through the wastes and seeped

Rainwater drained through the landfill and seeped into the ground water, contaminating the wells of nearby residents

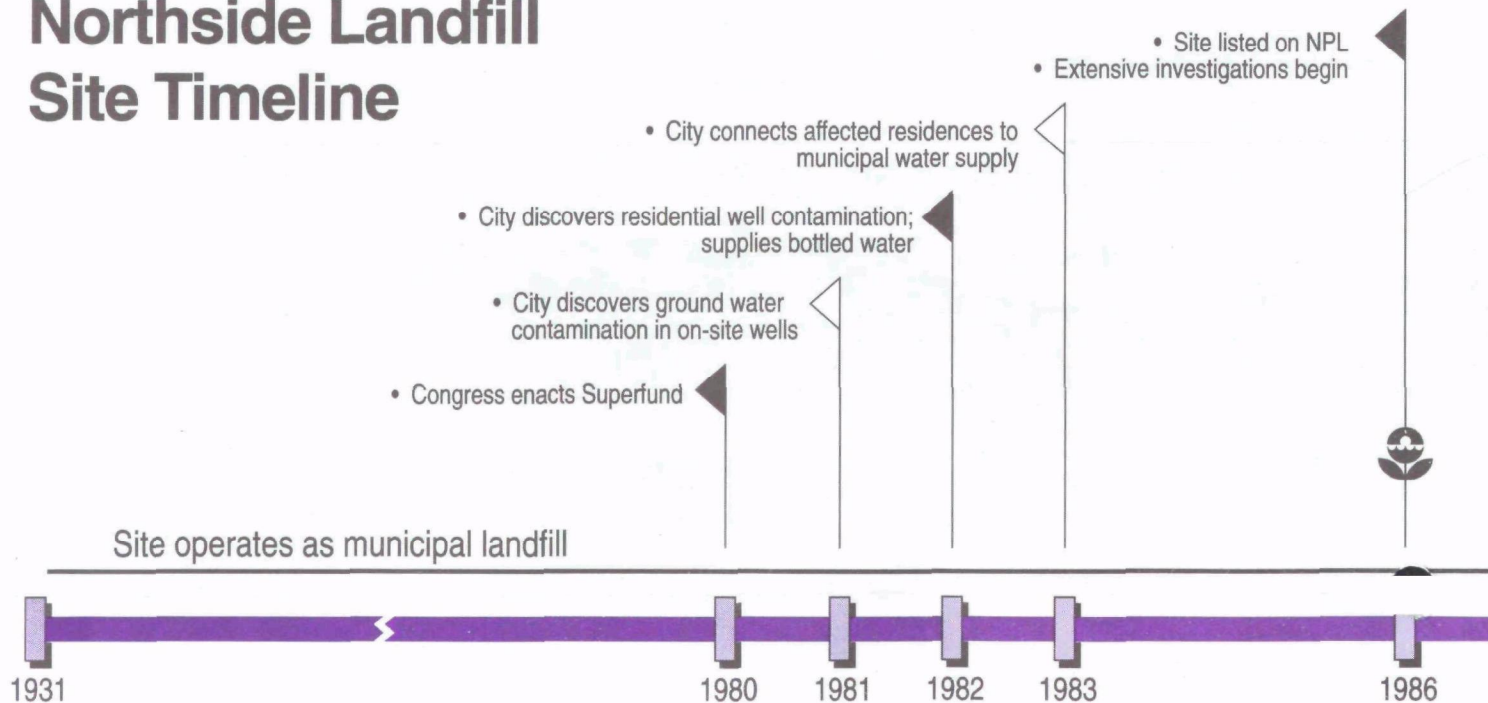
into ground water, contaminating the wells of nearby residents. Fortunately, fewer than 20 residences were affected.

Some of the residential wells contained the solvent tetra-

chloroethylene in concentrations above safety standards. Tetrachloroethylene and trichloroethylene are solvents for oils, paints and varnishes, and are used in dry cleaning, metal degreasing, textile dyeing, and in various pesticides.

Other contaminants found in testing wells included heavy metals such as iron, manganese, and lead. Possible health risks from direct contact with the chemicals include headaches, sleepiness, and liver and kidney damage. No such health problems have been reported by Spokane residents.

Northside Landfill Site Timeline



City and State Assist EPA with Cleanup

Private Wells Directly Affected

During the first 30 years of operation, commercial and residential garbage was dumped into the landfill's natural canyons and burned. In 1962, the city discontinued open burning and began

Site inspections revealed the soil was contaminated with cyanide and heavy metals

covering the refuse in the canyons with excavated soil. This practice continued until 1991.

During the same period, Congress enacted the Superfund law with a primary aim of cleaning up the nation's hazardous waste

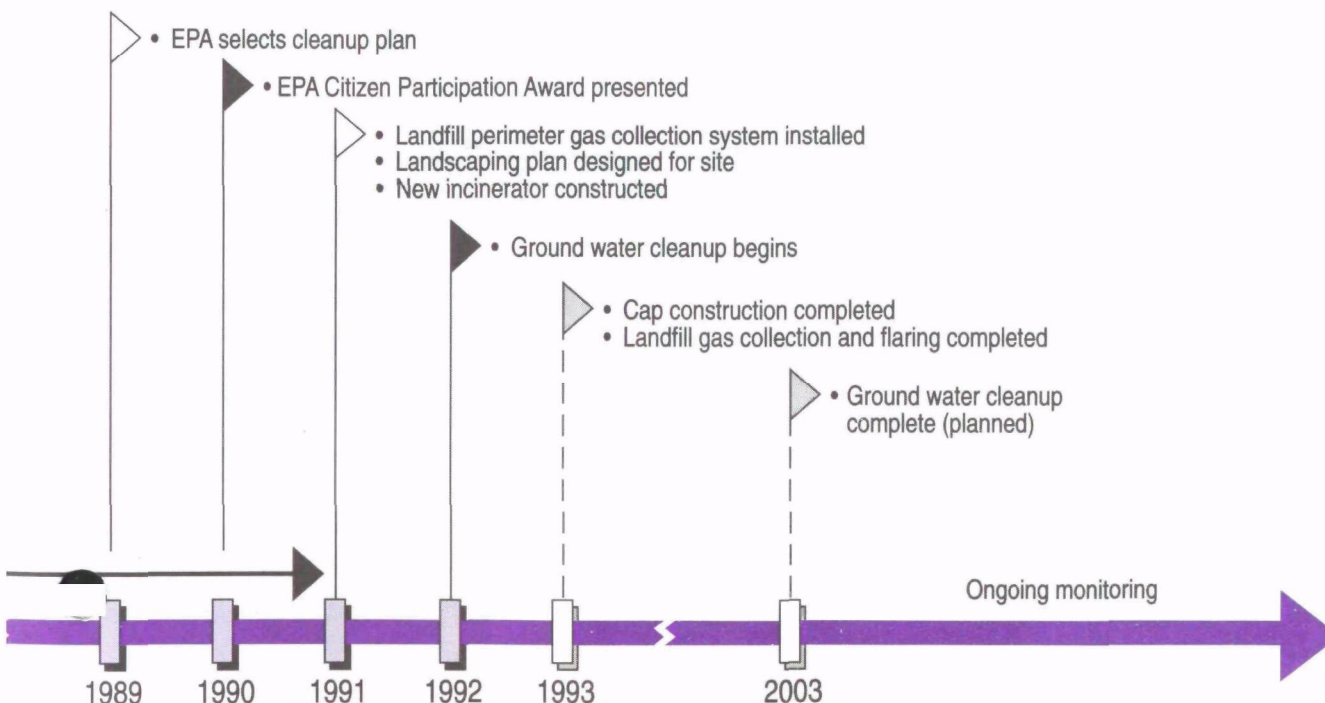
sites. Heightened awareness brought about by the development of the Superfund program caused local officials to take a closer look at this municipal dump.

In 1981, city workers sampled the ground water beneath the landfill and found evidence of contamination. In 1982, additional sampling revealed that 19 privately-owned wells adjacent to the site were polluted. The city quickly supplied affected residents with bottled water and by 1983 had connected them to the public water supply.

Despite numerous problems, the landfill continued to operate for several years until a new incinerator could be constructed to handle municipal and indus-



trial waste. While state officials focused on closing the landfill, the city designed a new approach to managing solid waste in the future. Since landfilling was no longer an option, converting waste to energy using incineration made sense for the entire region (see incineration sidebar, page 5). When the landfill was ready for closure, state authorities contacted EPA's Superfund program for assistance.



In 1986, EPA placed the Northside Landfill on the National Priorities List (NPL), a roster of hazardous waste sites eligible for cleanup under the Superfund program.

Plan Designed to Protect Public

Later that year, under a cooperative agreement with EPA, the city and Ecology agreed to investigate the nature and extent of contamination and the risks posed to the area. The studies, completed under EPA oversight in 1988, determined that the site warranted immediate attention. Thus, to reduce the source of ground water contamination as well as protect local drinking water supplies, EPA, Ecology, Spokane officials, and community

residents worked together to design a cleanup plan that satisfied all involved.

The plan was completed in September 1989 and involved:

- Closing and "capping" the landfill;
- Pumping and treating contaminated ground water;
- Providing an alternate source of drinking water to residents with contaminated wells;
- Controlling potentially dangerous landfill gases; and
- Monitoring the ground water for the next 30 years.

Cooperation Leads to Well-Managed Cleanup

In January 1991, city cleanup crews began operating a landfill gas collection and treatment system on the boundaries of the

site. During construction of the cap, the system was extended to include 20 gas collection units throughout the landfill to capture methane gas, produced by the decomposition of organic material. High-temperature flares burn the methane and gas contaminants, destroying most of the chemicals that cause odors in the

The cap prevents rainwater from entering the landfill and spreading contaminants

air emissions. City workers monitor adjacent areas to make sure that all landfill gas is captured and does not migrate off site.

The ground water pump and treatment system began with pilot tests in April 1992 and currently treats 1,000 gallons of water a minute. Water is sent to the municipal sewage plant for further treatment and disposal.

An impermeable protective cap was completed in May 1993, six months ahead of schedule. The cap is installed over 150 acres of buried waste and prevents rainwater from entering the landfill and spreading contaminants. In addition, the city constructed a 15-acre supplemental area for

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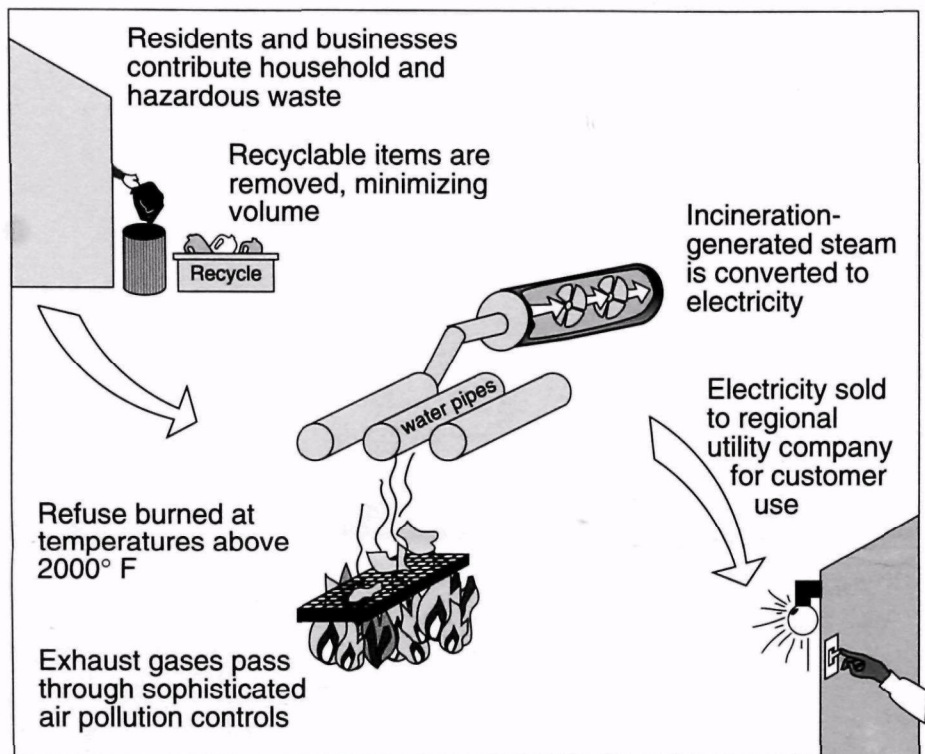


The Spokane Recycling Trash-to-Energy Facility generated 150 million kilowatts of electricity in its first full year of operation.

Waste-To-Energy: A New Kind of Waste Management

The need for a completely new approach to solid waste management arose in Spokane in the early 1980s when four landfills, including Northside, were placed on EPA's NPL. A city-county regional partnership was formed which adopted four priorities: waste reduction, recycling, energy recovery and minimal residual landfilling.

In September 1991, the city and Spokane County completed construction of a new incinerator which replaced the Northside landfill and many other small county landfills. This waste-to-energy plant accepts commercial and household hazardous waste and



regular garbage, burning 800 tons a day. Heat from combustion converts steam into electricity, which is sold to Puget Power, a regional utility. In 1992, the first full year of operation, the incinerator processed 293,000 tons of garbage and produced 150 million kilowatts of electricity.

The waste-to-energy plant is equipped with the latest available air cleaning equipment, including nitrogen oxide removal, acid gas scrubbers, and fabric filters which trap particulate matter. Performance records indicate the plant is performing at a higher standard than its permit requires.

City and State Assist EPA with Cleanup

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storage of non-combustible debris that cannot be incinerated. As a safety precaution, a synthetic liner was installed to ensure containment.

The city will continue to collect and treat landfill gases and pump and treat contaminated ground

**"The city was
way ahead of the curve.
They did a great job."**

water over the next ten years; the site will be monitored for 30 years to ensure the effectiveness of cleanup activities.

In evaluating the cleanup, Neil Thompson, the EPA site manager, commented on the determination and ingenuity of city officials in meeting their obligations to close the landfill by remarking, "the city was way ahead of the curve. They did a great job."

Keeping the Public Informed Is Key to Superfund Program

Throughout the cleanup, EPA, Ecology, and city officials distributed bulletins and fact sheets to inform area residents of plans and progress at the site. Beginning in 1989, Spokane residents were invited to a series of public meetings to clarify potential problems posed by the Northside Landfill.

Citizens were asked to comment on the proposed cleanup plan as well.

In 1990, one of the residents living near the landfill was given EPA's Citizen Participation Award for her efforts to organize neighbors living north of the landfill to request additional water quality testing. Sampling



results prompted EPA to place Northside Landfill on the NPL, and the site has been effectively remediated. As an EPA Community Relations Coordinator stated, "She helped Superfund clean up the landfill by promoting communications among residents and various government agencies."

In June 1991, the city and area residents designed a plan for landscaping the site following completion of the landfill cover. The entire site will be seeded for grass, and the natural vegetation of 40 acres of undisturbed woods along the perimeter of the property will be enhanced.

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Success at Northside Landfill

EPA, Ecology, and the City of Spokane worked together at the Northside Landfill to clean up and protect drinking water supplies.

The City of Spokane took the lead in designing innovative solutions to regional solid waste management.

Area residents participated in determining the best approach to address site contamination and return the land to a condition suitable for future use.

The cooperation of all parties was essential to provide city and county residents with clean drinking water.



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